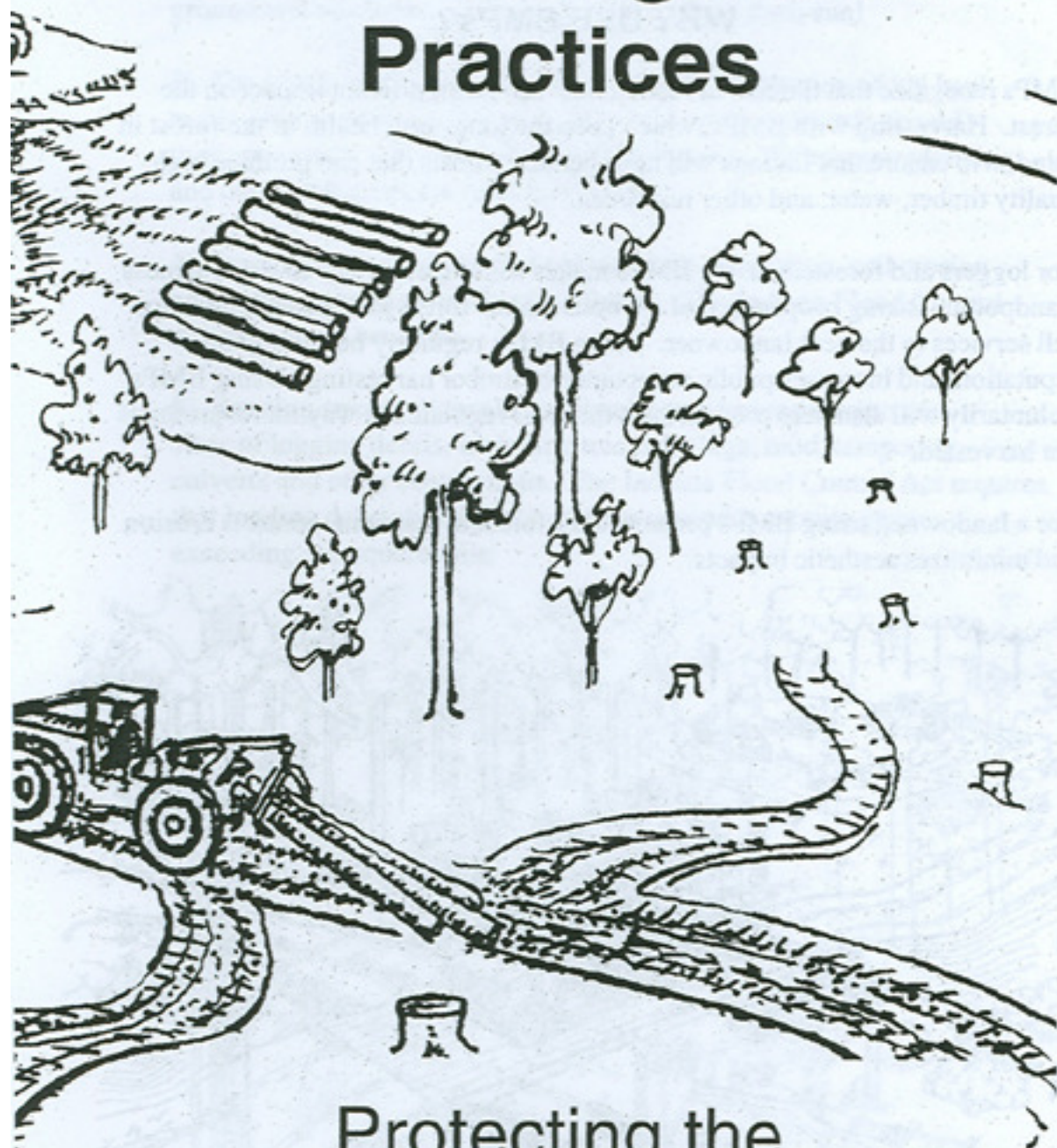


INDIANA

Forestry Best Management Practices



Protecting the
Woods While Harvesting

WHAT ARE FORESTRY BMPs?

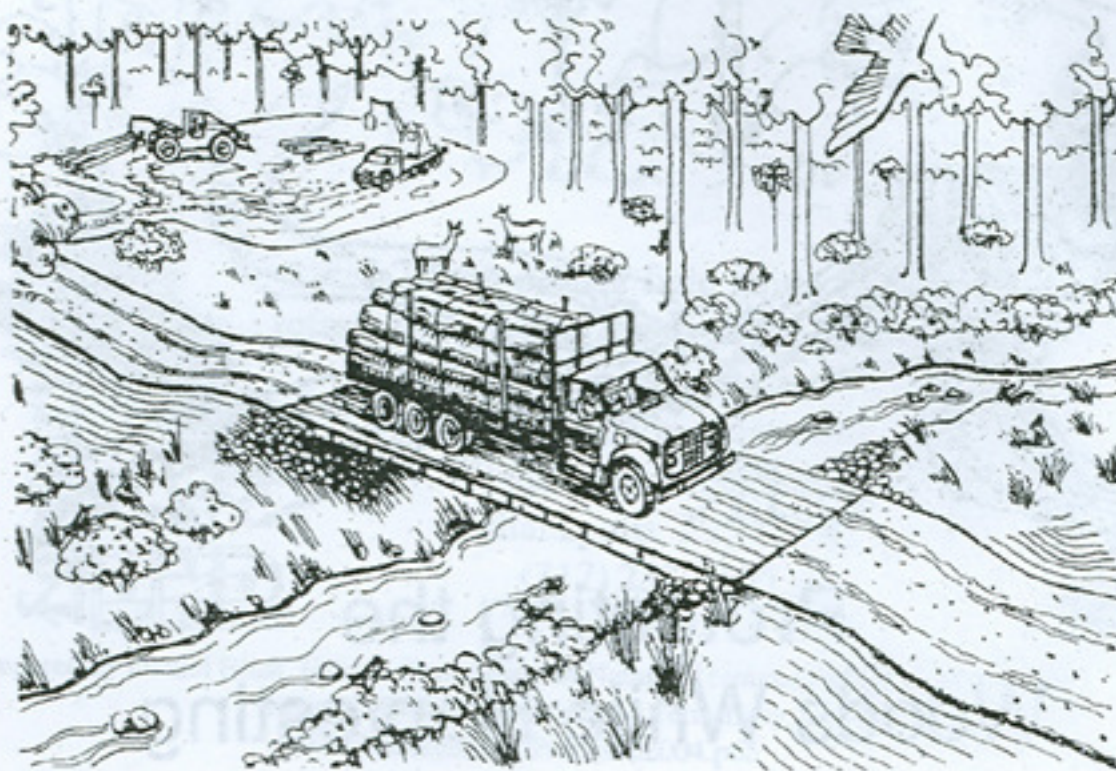
Best Management Practices, or BMPs, are ways of working to protect the forest and its soil and water resources while harvesting timber. BMPs are common sense things, which include not using a stream as a skid trail; closing logging trails properly so they don't erode; disposing of lubricants and other wastes properly; and not blocking stream channels. BMPs are smart for business, forest conservation and resource management.

WHY USE BMPs?

BMPs recognize that timber harvesting may have a significant impact on the forest. Harvesting with BMPs, which keep the long-term health of the forest in mind, will ensure that Indiana will have healthy forests that can produce high-quality timber, water, and other resources.

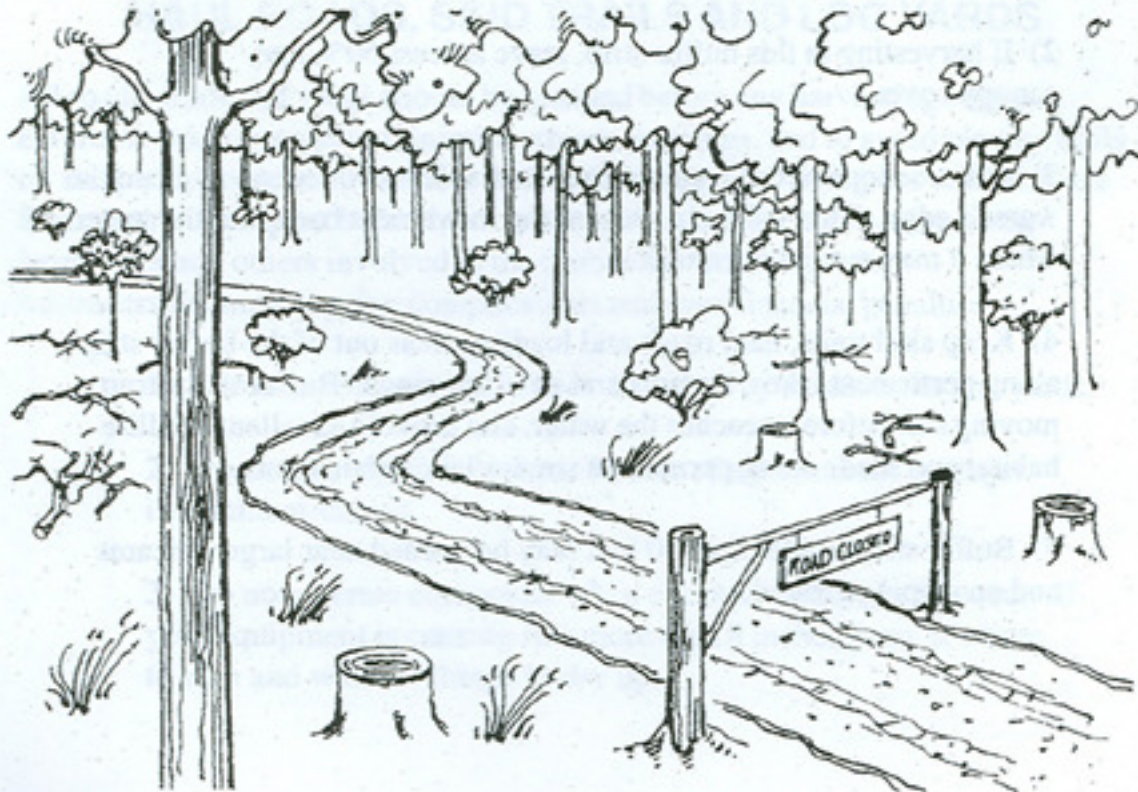
For loggers and foresters, using BMPs makes sense from a day-to-day business standpoint. Taking proper care of a woods makes forest jobs easier, and helps sell services to the next landowner. Using BMPs regularly builds a good reputation, and increases public acceptance of timber harvesting. Using BMPs voluntarily will also help prevent laws that will regulate the way forest products are harvested.

For a landowner, using BMPs protects their forest investment, controls erosion and minimizes aesthetic impacts.



BMPs INCLUDE:

- 1) Maintaining a buffer strip along all permanent and major intermittent streams where soil and tree disturbance will be minimized. This strip should be a minimum of 50 feet in width on both sides of perennial streams, and 25 feet for intermittent streams.
- 2) Proper disposal of all containers, lubricants and other trash. This includes hydraulic fluids, oil, gas, pesticides, pop cans, paper and more. Never drain equipment lubricants or fuel directly onto the ground and never leave a woods looking like a trash can!
- 3) The proper placement, construction and stabilization of log haul roads, skid trails and log yards. All roads, trails and yards should minimize short- and long-term site disturbance. With proper planning and construction, this is relatively simple.
- 4) Crossing streams properly to avoid bank excavation, soil erosion and polluting streams with soil sediment. The Indiana Flood Control Act may apply here also.
- 5) Keeping stream channels, overbanks and drainages open and clear of logging debris, including tree tops, logs, mud, temporary culverts and other obstructions. The Indiana Flood Control Act requires that logging debris be kept clear of streams with a drainage area exceeding one square mile.





BUFFER STRIPS (Riparian Management Zones)

A timber harvester should make every effort to protect trees and timber that will remain after the harvest. Likewise, all harvesters should strive to minimize the effect of harvesting on streams, lakes and overall water quality. Leaving buffer strips of undisturbed land between watercourses and harvesting activity is one way to protect water quality. When harvesting near lakes, streams, cave openings and other sensitive areas:

- 1) Leave at least a 50-foot strip next to the watercourse or cave opening where little or no harvest activity will take place.
- 2) If harvesting in this buffer strip, leave at least 50% tree canopy cover.
- 3) Pull tree tops out of watercourses and at least 50 feet away from the water's edge. This will help prevent top movement back into the water where it may restrict stream flow.
- 4) Keep skid trails, haul roads and loading areas out of the buffer strip along permanent lakes, streams and cave openings. Buffer strips trap moving soil before it reaches the water, and provide excellent wildlife habitat and shade along permanent stream/lake fish habitats.
- 5) Buffer strips wider than 50 feet may be needed near larger streams and on sloping ground.

WASTE DISPOSAL

One of the most abusive things you can do to the forest soil and water is to dump toxic wastes, like hydraulic fluids and used oil, onto the ground. Treat the land as if it were your own!



1) When changing fluids, drain the used fluid into containers and haul them away for recycling or proper disposal.

2) Refuel your equipment carefully to avoid spillage. This goes for chainsaws as well as larger equipment.

3) Clean up after yourself. A logger's reputation is affected by the site's condition after the job is completed. Pick up all trash and haul it away.

HAUL ROADS, SKID TRAILS AND LOG YARDS

All roads, trails and yards should be planned before any harvesting begins. Efforts should be made to minimize stream crossings, and to avoid placing trails on steep slopes prone to erosion, and on flat ridge tops with poor soil drainage. Some extra time spent beforehand looking over the site and talking to the landowner and others involved in the timber harvest will prevent misunderstandings, logging complications and even financial penalties.

1) Minimize the amount of area disturbed by roads, trails and yards.

2) Do not put log yards within 50 feet of a permanent or major intermittent stream.

3) Do not operate equipment when excessive rutting will occur. If your equipment is causing ruts more than 8 inches deep, it's time to stop and wait for things to dry up.

4) Close off roads and trails immediately after you're done with them. Smooth excessive ruts and install water diversion mounds, called water bars. Spacing of water bars depends on the steepness of the trail. The chart below indicates water bar spacing requirements. Most soil loss is likely to occur with the first big rain, so install water bars as soon as possible.

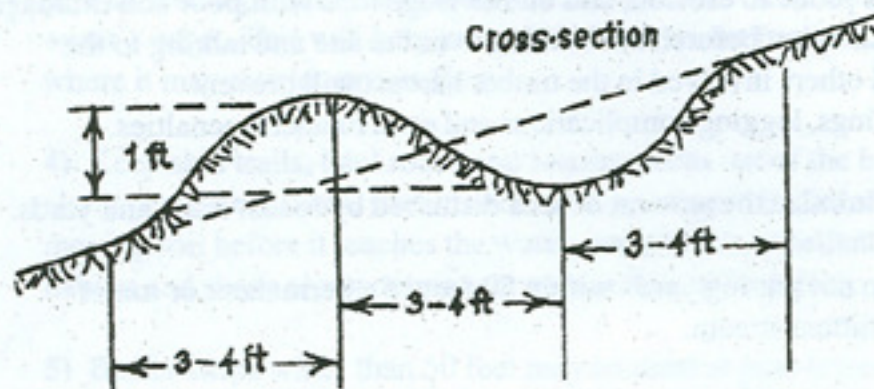
5) Seeding and mulching steep roads, trails and yards may be needed to do the job right. A mix of ten pounds of red fescue or orchard grass and two bushels (120 pounds) of wheat or rye makes a good seeding combination.

6) When laying out roads and trails, use a hill's contour and slope the road outward for good drainage.

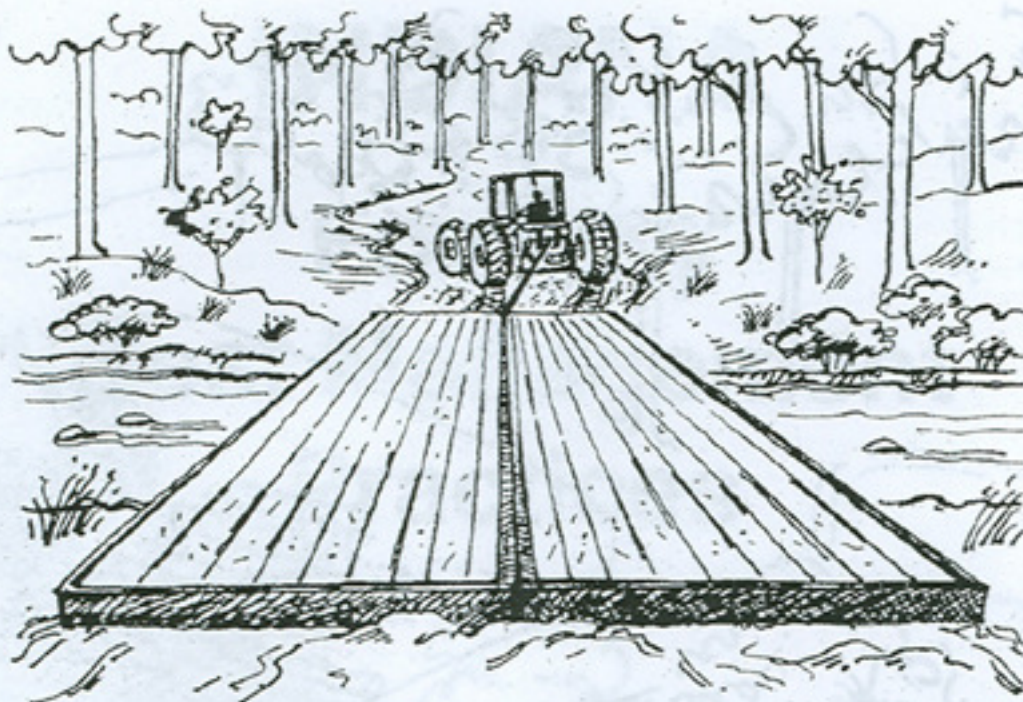
Spacing Between Waterbars

Skid Trail Grade (percent)	Approximate Distance Needed Between Waterbars (in feet)
1-2	500-250
3-5	250-125
5-10	125-80
11-15	80-60
16-20	60-40
21-30+	40-30

To properly construct a waterbar, you must consider waterbar location, angle, spacing, size and outletting.



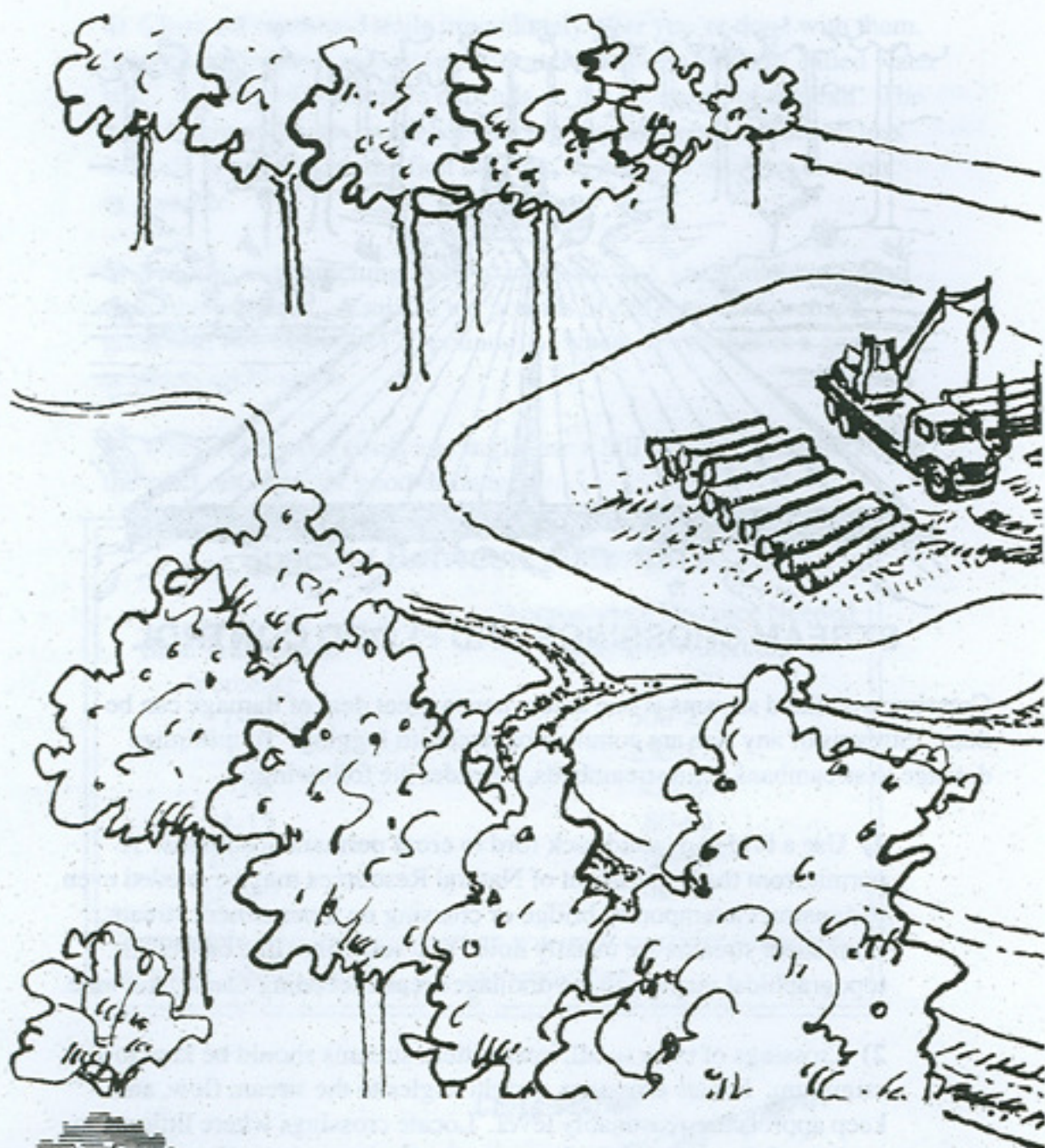
Build the water bar at least 12 inches higher than the road, and the ditch at least 12 inches below the surface to allow adequate drainage.



STREAM CROSSINGS AND FLOOD CONTROL

Crossing woodland streams is one area where a great deal of damage can be done. Streams of any size are common obstacles to logging. To minimize damage to streambanks and streambeds, consider the following:

- 1) Use a bridge or solid rock ford to cross permanent streams. A permit from the Department of Natural Resources may be needed even to construct a temporary bridge or crossing on a permanent stream. Permanent streams are usually noted as a solid blue line on USGS topographical maps, or have drainage areas exceeding one square mile.
- 2) Crossings of even small, intermittent streams should be kept to a minimum. Locate crossings at right angles to the stream flow, and keep approaches reasonably level. Locate crossings where little or no bank work is needed and where a rocky bottom exists. If needed, rip rap the stream crossing to prevent rutting. Lay the rock to conform with the original stream bottom to prevent damming the stream flow.
- 3) Remove all stream flow obstructions created by the harvest. Pull harvested tree tops, temporary culverts and other obstructions out of the stream immediately, or after work is completed. The Indiana Flood Control Act (I.C. 14-28-1) prohibits any fill or obstruction that will "adversely affect the efficiency of or unduly restrict the capacity of a floodway." Penalties have been assessed against timber operations that left tops and debris in floodways and stream channels.



For a detailed BMP field guide, or further
information about Forestry Best Management
Practices, contact:

IDNR Division of Forestry
402 W. Washington Street, Room W296
Indianapolis, IN 46204
(317) 232-4105

Prepared by Daniel Ernst, Indiana Department of Natural Resources' Division of Forestry;
revised 09-04. Illustrations by Terry Lacy.
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